

INVERTEBRATA

Library
Queen Victoria Museum
and Art Gallery
Launceston

Issue 3

Autumn 1995

It looks like putting the deadline in the editors note didn't work. That, or it is just a very busy time of year and not many people managed to contribute. Reminders were not sent out because there is no separate funding available at present for the newsletter and the mailing list is increasing constantly. For future editions the deadline will be moved forward so there will only be one month from its release before articles are due. **Therefore the deadline for the next issue is Friday 7 April 1995.** The next edition however will still be produced in early May. Hopefully this will encourage articles to be dealt with promptly before the inspiration gets tossed in the bottom of the IN tray to be lost forever - or at least until after the deadline.

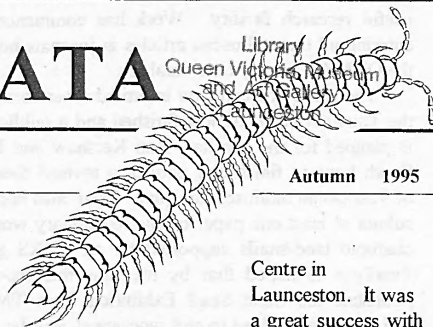
The last edition demonstrated that invertebrate research is alive and well in Tasmania. The mailing list really reflects the growing interest in this understudied and wonderful discipline. I have included the invertebrate register of those people who replied to my request for information about their invertebrate interests and I hope it is useful for some networking in Tasmania and elsewhere. If you have not been included in this register and you would like to be, or you spot an inconsistency please let me know as the register will be updated regularly.

Articles more than 150 words can be sent on disk as an ASCII file or a text file. The opinions expressed in this newsletter are not necessarily those of the editor or the *Queen Victoria Museum and Art Gallery*.

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Around the Traps ... **Queen Victoria Museum & Art Gallery**

The main event in the Zoology Department in the last few months was the NE Tasmania Symposium held from 4-6 February at the Raymond Ferrall



Centre in
Launceston. It was
a great success with

an incredible amount of information being generated and put into the context of NE Tasmania. The value of an event like this was evident in the excitement of the speakers and delegates over the three days and the sharing of much previously undocumented material. The symposium was attended by 112 people from many disciplines including many lay people from the area in question. The field trip was really stimulating and even the inclement weather could not stop us. In fact, it probably added to the atmosphere. The bus drivers though would probably ensure they checked out the bus route first next time.

Thanks go to all the delegates who were a fantastic bunch of people and we couldn't have had a more relaxed group to learn 'what not to do' in organising a symposium of this type. Congratulations to Tim Kingston for initiating the symposium and to the other staff who made it all run smoothly. The proceedings will be available in the next financial year through the QVMAG.

Jane Griffith has been beaver away at managing our collection with a significant number of specimens now registered on our TITAN system. Jane has made a vast contribution to the quality and accessibility of our collection which was overdue.

Louise McGowan is planning to become very familiar with Tasmanian spiders (with help from Lynne Robertson and Liz Turner) beginning with the Pump House Point collection. She will endeavour to work through Tracey Churchill's collection from NE Tasmania to become more attuned to familial differences. Long term projects include working through the spiders from the Maggs Mountain material accumulated from Bob Green's collection, spiders from the Tasmanian Biodiversity project and any other relevant material.

The curation of the mollusc collection and entering the data onto TITAN is progressing well. The plan is to get all the existing collection on by the end of calendar '95 and then to try to fill in species deficiencies. The collection of molluscan reprints is on the library database (over 2000) and now makes a

useful research facility. Work has commenced on entering all the molluscan articles in journals held by the QVMAG library onto database.

The survey of common intertidal invertebrates of the Tamar River is almost finished and a publication is planned for the results. Ron Kershaw and Brian Smith hope to finish and publish a revised checklist of Tasmanian molluscs this year. Brian also hopes to submit at least one paper on his revisionary work on charopid land-snails supported by an ABRIS grant. Finally it is hoped that by the time this report is published the Land Snail Exhibition from TMAG, which we have added to and redesigned, will be up in the Zoology gallery for an extended period. This has certainly been a different experience for our newest member of the Graphics department.

Tasmanian Museum & Art Gallery

Changes are everywhere in the Invertebrate section of the TMAG. Margie Morrice has now moved to her new base at the University under the terms of her new grant from the Australian Nature Conservation Agency. Liz Turner remains one of her supervisors, however, and will still be actively involved in identification of the prey species of the introduced northern Pacific seastar *Asterias amurensis*. Margie is already missed - the museum is not the same place without the frequent pungent smells of dissected seastars, and wet footprints leading from the docks to the museum's shower.

Roger Buttermore is now a bumble-bee authority. He has amassed a great deal of knowledge and references on this recently introduced insect and will be lecturing to interested groups, including the Ecological Society of Australia in July. Roger has also set up an active bumble-bee hive, complete with queen, and is hoping for great events in the brood chamber.

The advent of computer digital imaging has been a highlight for Liz Turner and Noel Kemp (geology). The Information and Technology Branch of the Tasmanian Dept. of Education and the Arts has lent the TMAG a Macintosh Centris 660AV computer, although we are investigating financial sources to obtain our own. Two major projects, already commenced, are to electronically store images of the TMAG's mollusc TYPE collection on its data base, and stored images of microscopic fossils shark teeth. Backup laserwriter hard copies of the records and their images are printed, catalogued and filed. (see separate article on digital imaging in this edition).

The restoration of bottled specimens to the new compactus units in the invertebrate spirit store is underway, but due to lack of staff is not completed

yet. We continually need specimens which are still packed in apple-cases underneath dozens of other apple-cases. Roger's arm muscles are becoming finely tuned.

Lynne Robertson has completed her National Estate Grant to work on a survey of the spiders of the NW of Tasmania, and congratulations go to Christine Materia who is now the proud mother of Joshua.

CORRECTION

In the second issued of *Invertebrata* I made an error regarding the dates for Tasman's visit to Tasmania. To correct it, turn to 'Where it all started' in that issue and delete 'by our calendar' in the first sentence, and the whole of the next sentence. In sentence 3 change '2 December' to '1 December' and in sentence 4 change '3 December' to '2 December'.

My confusion can be blamed, in part, on Pope Gregory XIII, who issued a papal bull abolishing 10 days in October, 1582. This calendrical adjustment was accompanied by the replacement of the Old Style, or Julian, calendar with the New Style, or Gregorian, calendar, in all Catholic countries. Not everyone was happy with the adjustment. England didn't change over until September, 1752, and there were loud complaints from various quarters about days being lost from one's life by Royal decree, not to mention missed birthdays. The Dutch state made the switch at end of the 17th century. I am still not sure whether Abel Tasman's journal date for the sighting of Tasmania, 24 November 1642 was Old Style or New Style. Can any reader help?

Bob Mesibov
Research Associate, QVMAG

Articles

Digital Imaging in the Tasmanian Museum

The Invertebrate and Geology sections of the Tasmanian Museum and Art Gallery have entered the computer world of microscopic digital imaging. This is the electronic capture and storage of microscopic specimen pictures from microscope to computer.

Liz Turner has commenced the storage of images of the TMAG's mollusc TYPE collection within its database. These are mainly Tenison Woods and W.L. May micromolluscs. Noel Kemp, Curator of Geology, is storing images of <6mm Cretaceous shark teeth.

The process of electronic digital storage and printing of microscopic images passes through several stages. Initially the specimen is placed under the microscope and the light source and magnification

**Invertebrate
Specialist
Register (Tas.)
March 1995**

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Mr	Winsor	Leigh	James Cook University	Department of Zoology	Post Office, J.C.U.	TOWN
Mr	Woodley	Norman	Smithsonian Institution NHB 168	Systematic Entomology Laboratory		Washi

	POSTCODE	STATE	TELEPHONE	FAX	AREA OF INTEREST		
SOMOND	5064	SA	08 303 7265	08 379 4095	Systematics & biogeography of parasitic Hymenoptera		
HIDE	5005	SA	08 303 5594		Taxonomy of Buprestidae		
RT	7001	TAS	002 33 8231	002 33 8292	Forest Entomology		
N	801	N.T.	089 898 211	089 898 289	Entomology		
M EADOWS	7249	TAS	003 36 5254	003 36 5365	Freshwater Invertebrates		
CAMPSHIRE, O3824		USA	603 862 1735	603 862 4757	Effects of timber management on forest litter beetles		
RT	7000	TAS	002 236 622	002 234 372	Aquatic Insects - Ephemeroptera, Plecoptera, Odonata, Trichoptera		
AN	4111	OLD	07 875 5398	07 875 7459	Spider ecology & taxonomy, community ecology		
RT	7001	TAS	002 333 791	002 333 477	TASPAWS		
PAP	4061	OLD	07 300 5650		Insect Ecology		
IA	7277	TAS	003 30 1493		Lepidoptera		
GESTON	7250	TAS	003 316 777	003 345 230	Rocky shores, marine environments		
RRA	200	ACT	06 249 3028	06 249 5573	Systematics of Coccoidea (Scale insects & mealybugs)		
I	6000	WA	09 427 2737	09 328 8686	Arachnids (pseudo-scorpions, watermites, spiders)		
GESTON	7250	TAS	003 327 675	003 327 695	Coleoptera & general entomology		
NPOR T	7310	TAS	004 217 636	004 245 142	Tas. Noctuidae (checklisting), Dipsochoramorphan Hemiptera (taxonomy).		
RT	7001	TAS	002 202 837		General/Aquatic Insects		
EY SOUTH	2001	NSW	02 339 8322	02 360 4350	Arachnids - Taxonomy of Opiliones, taxonomy of Onibatid mites,		
HI BRISBANE	4101	OLD	07 840 7707	07 846 1918	Isopods, slaters, oniscids		
GESTON	7250	TAS	003 316 777	003 345230	Earthworms		
RT	7001	TAS	002 325 356	002 325 000	General		
RRA	2601	ACT	06 246 2468	06 246 4000	Systematics and biology of Coleoptera		
NPOR T	7310	TAS	004 242 783		Formicidae - taxonomy and behaviour		
HIDE	5000	SA	08 207 7506	08 207 7222	Coleoptera - Tenebrionidae		
GESTON	7250	TAS	003 316 777	003 345 230	Spiders, scorpions		
OUTH	7215	TAS	003 725 143	003 725 619	Wildlife ecology, Zoonotic diseases		
RT	7001	TAS	002 202 840	002 202 989	Insect ecology, insect-plant relationships		
	7320	TAS	004 313 428		Litter Invertebrates		
RT	7001	TAS	002 202 832		Coleoptera		
dford	3067	VIC	03 284 0200	03 416 0475	Trichoptera		
RRA	2601	ACT	06 246 4258	06 246 4264	Lepidoptera		
RT	7001	TAS	002 336 164	002 333 477	Butterflies, particularly rare species		
LLYN	7250	TAS	003 315 191		Parasitology/filmology		
EY	2000	NSW	02 339 8120		Freshwater and terrestrial molluscs, Invertebrate conservation.		
-G HAMBURG		GERMANY	040 4123 5644	040 4123 3937	Onychophora		
CIA	4072	OLD	07 365 2257	07 365 1922	Biosystematics of Diptera, especially acalyptrates		
M EADOWS	7249	TAS	003 36 5402	003 36 5365	Aquatic invertebrates		
EY	2000	NSW	02 339 8221		Taxonomy of Psocoptera, Neuroptera & Mecoptera		
DAM	5062	SA	08 271 4433	08 276 8873	Acarina		
Y BAY	7005	TAS	002 207 951	002 207 942	Biology and ecology of heteropterans and their insect-plant interactions.		
RT	7000	TAS	(002) 35 0724	002 347 139	Dung beetles. Marine biology, specialising in micro-molluscs & echinoderms.		
					Spiders - I.D. & ecology		
ROFT	2119	NSW	02 872 0131	002 871 6941	Malacology (personal), Forest Entomology (Work)		
RT	7001	TAS	002 202 613	002 202 745	Freshwater microlnvertebrates (especially microcrustaceans). Limnology & ecology of wetlands, lakes and coastal dune lakes.		
RRA	2601	ACT	06 246 4267	06 246 4000	Taxonomy & Zoogeography of selected groups of Coleoptera & Gerromorpha (Hemiptera).		
SVILLE	4811	QLD	077 814 181	077 251 1570	Terrestrial Flatworms (Terrestrial nemerteans; Acoela)		
ington DC 20560		USA	202 382 1802	202 786 9422	Diptera: Brachycera, esp. Stratiomyidae		

are adjusted accordingly for the best picture, which is conveyed by video camera onto a TV monitor. Using either of two software programs, NIH Image 1.57 or Adobe Photoshop™, on a Macintosh Centris 660AV (which has a built-in framegrabber) the image is acquired and saved. Depending on the applications it can also be enhanced, measured, edited, animated, printed and pseudo-coloured.

The image is then imported and stored into FileMaker Pro™ along with the relevant data. Additional information can be added at any time into the database. Backup laserwriter hardcopies of the records and their images are printed, catalogued and filed. (Specimens will also be photographed on the same microscope using conventional techniques as a final fail-safe).

There are several important reasons to digitise and photograph relevant museum collections:-

- ◆ Most museum specimens are irreplaceable because of their scientific, cultural and/or historical values, especially TYPE micro-molluscs. Working from images would protect specimens from wear and tear, and save time spent between laboratory and collection.

- ◆ Printed images of specimens, particularly types could be sent very quickly to scientists nationally and internationally either by snail mail (ordinary mail) or e-mail. Time saved by the ability to electronically recall and/or send species images would greatly enhance efficiency and ensure against loss or damage to the specimen.

- ◆ The resolution of some printed images is good enough for them to be used for public display and lectures, opening a window to the public of previously unviewed objects. A colour printer would be a great asset.

- ◆ Digital imaging also has applications for identification, conservation and research in other fields, eg. geology, botany, textiles and art works. The technology is transferable to IBM compatible computers.

Elizabeth Turner, Invertebrate Zoology, Tasmanian Museum.

Pitfall Trapping

I was recently asked to look at Tasmanian myriapods from invertebrate pitfall traps filled with

ethylene glycol (antifreeze). Ethylene glycol had previously been used in 1986 by the Tasmanian Rainforest Ecological Expedition (TREE) from Southampton University. In both cases the results were appalling: specimens were poorly preserved and not at all fixed. Limbs had detached from trunks and taxonomically important details, such as setal numbers and positions, could not be recovered. Few of the specimens could be confidently identified to species. Specimens of new species, if they were present, would be of little value as types.

The argument in favour of ethylene glycol is that it doesn't evaporate from traps left open for long periods. In my opinion, this benefit comes with too high a cost. I recommend 50% ethyl alcohol with 5% glycerol as a trapping medium 'proven under Tasmanian conditions', but *Invertebrata* readers may be able to suggest other alternatives to ethylene glycol.

Bob Mesibov
Research Associate, QVMAG

Research Projects

A PRELIMINARY REPORT ON LARGE AGGREGATIONS OF *TURBO UNDULATUS* SOLANDER GASTROPODA OCCURRING INTERTIDALLY ON A ROCKY SHORE IN TASMANIA.

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Department of Primary Industry and Fisheries, Falmouth, Tasmania 7215

Large fluctuations in the density of an intertidal population of *Turbo undulatus* (Gastropoda: Turbinidae) are being investigated by the staff of the Queen Victoria Museum and Art Gallery. Dense aggregations of these animals occur approximately every two years in the intertidal region of a temperate rocky shore at Falmouth, E. Tasmania (41°31'S, 148°16'E). The aggregations appear to be highly localised and, at Falmouth, occur on a single headland.

The foreshore along this particular section of the coastline at Falmouth consists of closely packed, large granite boulders which support very few macroalgae. During certain years, in late summer, this shoreline gradually becomes inundated with sand. The amount of sand dumped and the length of time that the boulders are covered varies annually

(McManus, pers obs.). The beginning of an increase in the density of *Turbo undulatus* intertidally, appears to coincide with the commencement of sand accumulating amongst the boulders (McManus, pers obs.). Winter storms eventually wash the sand away (McManus, pers obs.) and the numbers of *T. undulatus* in this intertidal region approach zero again.

The latest increase in the density of this species was first observed at the beginning of March 1993 (McManus, pers obs.). Preliminary counts were recorded from haphazardly placed 25 cm² quadrats on 2 April 1993. In one such quadrat, recorded numbers of *Turbo undulatus* were as high as 431 individuals (6896 animals/m²). At this time almost every crevice between the boulders in the littoral zone was filled with live animals of *T. undulatus*. Further counts were performed on 18 April 1993 by which time larger sections of the shore were covered with sand and the aggregations were confined to a few outcrops of rock. However, numbers of *T. undulatus* were still high in these last remaining areas. During 1994 no large aggregations of *T. undulatus* were observed at Falmouth.

Such high densities of *Turbo undulatus* have not been reported before and prominent researchers on temperate rocky shores in Tasmania have not observed such large aggregations (I. Bennett, pers comm.; A. Richardson, pers comm.). Initial studies indicate that the full size range possible for animals of *Turbo undulatus* occur (up to 50 mm diameter). This implies that the aggregations are not the result of an increased recruitment per se but must be the result of a migration of animals from sublittoral populations. Because all size classes are present it seems unlikely that the animals are aggregating solely for breeding purposes. Other intertidal gastropods were found also in higher numbers than usual for Falmouth (e.g. *Thais orbita*, *Monodonta constricta* and *Nerita atramentosa*) (McManus, pers obs.) but none obtained the densities recorded for *Turbo undulatus*.

The subsequent increase and decrease in numbers of *Turbo undulatus* are being monitored through a series of permanent quadrats in the area. Both numbers and the size of the animals will be recorded over time. Factors possibly influencing the aggregation of these animals, such as food sources, are being investigated also. The researchers would be interested to hear from anyone who may have observed such an event elsewhere.

POETRY

Snail Stripper for Jenny

Beneath the Agapanthus shrub
There is a Mollusc Slipper Club
That boasts an act to titillate
The jaded snail sophisticate

To shifting drums and throbbing base
A vamp comes out at sensual pace
In lurex mantle, sequined shell
She weaves a concupiscent spell

Explicit movements, not Burlesque
But undulating Arabesque
She slides across the flickering strobe
And, piece by piece, removes her robe

To climax this erotic act
She makes her lovely foot contract
And slips from underneath her shell:
A hyper-naked Jezebel

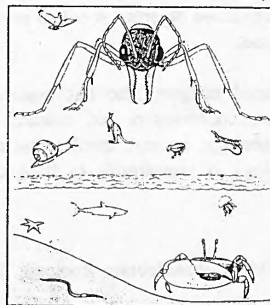
Not every eye was out on stalks
Nor every snail who gasps and gawks
A cynic gives a knowing shrug
"She's nothing but a common slug!"

From a collection of poems by Gus Ferguson entitled 'Snail Morning', published in 1979 by Ad. Donker.
(submitted by Brian Smith)

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The deadline for the next newsletter is Friday
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